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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/930,548	08/15/2001	Stephen Suryaputra	120-179	9857

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EXAMINER	
GREY, CHRISTOPHER P	
ART UNIT	PAPER NUMBER
2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/930,548	SURYAPUTRA ET AL.	
	Examiner	Art Unit	
	Christopher P. Grey	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 April 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *27-31* is/are allowed.

6)☒ Claim(s) *1-8,10,11,13,15-25,32-37,41 and 42* is/are rejected.

7)☒ Claim(s) *9,12,14,26,39,40 and 43-47* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 3, 4, 11, 15, 18, 20, 21, 32, 34, 35, 36, 41 rejected under 35 U.S.C. 102 (b) as being anticipated by Gerla et al. (Fault Tolerant PON Topologies), hereinafter referred to as Gerla.

Claim 1, 18, 32, 41 Gerla discloses designating at least one back-up end-system to the primary end-system **(page 0051, 3, a station can reach the root of the tree via 2 separate links, 1st link is primary and 2nd link is backup, disjoint paths)**;

Gerla discloses constructing a failover tree **(page 0051. redundant tree topology, see fig 3a and 3b)** through the optical communication system to the at least one backup end system prior **(R tree and L tree are already constructed prior to failure, see figs 3a and 3b; page 0052, 4, if a failure hits the L-link, then the backup path is the path on the R-tree)** to a detection of a degradation or failure affecting the primary end-system **(page 0052, 4, if a failure hits the L-link)**;

Gerla discloses forwarding communications from the protected end-system to the primary end-system **(page 0051, 3, a station can reach the root via a disjoint path, where the root is equivalent to the protected end system);**

Gerla discloses detecting a degradation or failure affecting the primary end system **(page 0052, 4, if a failure hits the L-link)**.

Gerla discloses upon detection of the degradation or failure affecting the primary end-system, switching traffic from forwarded by the protected end-system to the primary end-system to one of said at least one back up end-system using the failover tree **(page 0052, 4, if a failure hits the L-link, then the backup path is the path on the R-tree)**.

Claim 3, 20, 34, 35 Gerla discloses the L and R trees being setup prior to failure **(R tree and L tree are already constructed prior to failure, see figs 3a and 3b)**, where in the event of failure, a backup path is automatically used **(page 0052, 4, if a failure hits the L-link, then the backup path is the path on the R-tree).**

Claim 4, 21, 36 Gerla discloses determining a root node for the failover tree; and constructing the failover tree rooted at the root node (**R and L trees are formed at the root node disclosed in fig 4)**.

Claim 11 Gerla discloses determining a failover node **(root in fig 4)** along the failover tree in the optical network **(the claim does not specify or define a failover node)**;

Gerla discloses establishing a backup lightpath from the failover node to a backup end system; and switching traffic to the backup lightpath by the failover node **(page 0052, 4, if the failure hits an L-link, then the backup path is the path on the R-tree and page 0053, 4, station switches over from the primary to the backup path).**

Claim 15 Gerla discloses relinquishing lightpath resources by a number of nodes from the failover node to the primary end system **(see fig 3b, this tree represents the**

backup path from the failover nodes, where the nodes within this tree relinquish their resources).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 2, 19 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerla et al. (Fault Tolerant PON Topologies) in view of Liu (US 5914798),

Claim 2, 19, 33 Gerla does not specifically disclose receiving a setup request from the protected end-system specifying the at least one backup end system.

Liu discloses receiving a setup request from the protected end-system specifying the at least one backup end system **(fig 7, 803, determining an alternate path involves sending a request to the database 805, and retrieving an alternate path)**.

It would have been obvious to one of the ordinary skill in the art at the time of the invention that in the event of a failure as disclosed by Gerla, some form of indication of the switching to a backup path is necessary prior to failover. The motivation for this is fast failover and reduced latency of transmission (inherent in the art).

3. Claims 5-8, 10,13, 22-25, 37, 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerla et al. (Fault Tolerant PON Topologies) in view of Lamport (US 5138615)

Claim 5, 22, 37 Gerla discloses completely switching from a first path to a second path as disclosed in the rejection of claims 1 and 18. Gerla does not specifically disclose identifying a candidate node within a predetermined distance; constructing a shortest path spanning tree from the candidate node to the back up system, and selecting the candidate node as the root node.

Lamport discloses each node within the spanning tree being a possible (candidate) root node (Col 39 lines 41-50).

Lamport discloses each switch (node) determining its position in the spanning tree (Col 39 lines 10-28). Lamport also discloses a preferred path being the shortest legal path (Col 9 lines 28-33 and Col 8 lines 64-67). Lamport discloses the process of reconfiguration as disclosed in the rejection of claims 4, 21 and 36, where it would have been obvious to one of the ordinary skill in the art at the time of the invention to implement the shortest path determined from analyzing the spanning tree from an alternate node to the end system.

Lamport discloses the switches agreeing (selecting) on the identity of the root node (Col 39 lines 10-50).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the failover procedure as disclosed by Beardsley, to determine a

root node as disclosed by Lamport. The motivation for this modification is to implement a root node, which assists in reconfiguration (Col 6 lines 15-21).

Claim 6, 23 Gerla does not disclose using a marking scheme to identify the candidate node. Lamport discloses using a node ranking (marking), where each switch is ranked based on how close it is to the root node (Col 3 lines 14-18).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the failover procedure as disclosed by Gerla, to use a ranking rule as disclosed by Lamport. The motivation for this modification is to monitor how close each node is, assisting in determining a shortest path on reconfiguration.

Claim 7, 24 Gerla does not disclose solving a geometrical problem to identify the candidate node.

Lamport discloses ranking the nodes based on how close they are to the root node (Col 3 lines 14-18). Furthermore Lamport discloses determining a shortest path (Col 9 lines 20-33 and lines 15-20).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the failover logic to determine a shortest path, where in determining a shortest path, geometrics must be taken into consideration.

Claim 8, 25 Gerla does not disclose constructing the shortest spanning tree from the candidate node to the back up end system based upon topology information.

Lamport discloses finding a shortest path (Col 9 lines 20-33 and lines 15-20), where this path is related to a spanning tree (Col 6 lines 4-12). Lamport also discloses

using the spanning tree to perform reconfiguration, where reconfiguration involves updating topology information (Col 34 lines 5-17 and Col 3 lines 35-44).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the failover logic as disclosed by Beardsley, to recomputed the paths within the spanning tree in order to update the changes in the topology of the network (Col 39 lines 10-27).

Claim 10, 42 Gerla discloses the detection of a failure as disclosed in the rejection of claim 1 and 27. However, Gerla does not specifically disclose monitoring a bearer channel between the primary end system and a corresponding edge node and querying the primary end system.

Lamport discloses monitoring links, and detecting the failure of any part of the network (Col 33 line 60 – Col 34 line 4).

Lamport discloses the reconfiguration program (optical service agent) continually monitoring (querying) the link units in a switch, and detecting any fault within the network.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the detection of a failure as disclosed by Gerla, with the monitoring mechanism as disclosed by Lamport in order to effectively and automatically detect and recover from a failure.

Claim 13 Gerla does not disclose sending a lightpath setup request by the failover node downstream toward the backup lightpath.

Lamport discloses in the event of reconfiguration, which is triggered by a failure, a switch sending to all of its neighboring nodes a message indicating its reconfiguration (Col 39 lines 10-28).

Therefore it would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the switching procedure as disclosed by Gerla to indicate via a message or request that a failure has occurred and that there is a need for switching over to a back up path. The motivation for this modification is to ensure that a backup path is available and indicate to the backup end system that a failure has occurred and switching is necessary.

4. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerla et al. (Fault Tolerant PON Topologies)

Claim 16 Gerla discloses repairing the failure of a given node (page 0052, 4, repairs can be immediately started).

Gerla does not specifically disclose switching traffic back to the primary end-system.

It would have been obvious to one of the ordinary skill in the art at the time of the invention that the idea of repairing a failed node may result in switching back to the primary node or path from a backup node or path. This concept is well known and understood within the art.

Claim 17 Gerla discloses repairing the failure of a given node (page 0052, 4, repairs can be immediately started).

Gerla does not specifically disclose designating the primary end-system to back up the backup end system.

It would have been obvious to one of the ordinary skill in the art at the time of the invention that the idea of repairing a failed node may result in several different restoration techniques, including using the repaired node as a back up node, backing up the new primary node which took over the role of primary when the failure occurred. This concept is well known and understood within the art.

Allowable Subject Matter

5. Claim 27-29, 30, 31 allowed.

6. Claims 9, 12, 14, 26, 39, 40, 43, 44, 45, 46, 47 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's arguments filed on April 4, 2007 have been fully considered but they are not persuasive.

(a) The applicant argued that the cited art does not disclose calculating a path to a different destination.

The examiner makes note that although a primary and backup end system are claimed, no where within the claim is there disclosed that these end systems are a destination. In view of the preceding statement, traffic may be routed from the root to any of nodes S1-8 (see fig 5 and view the directions of arrows), where the path taken may be a direct route or alternate route depending on the existence of a failure or degradation. In the event that an alternate route is taken, the intermediate nodes along the path to reach a destination are different. Thus these different/alternate intermediate nodes, equivalent to an end system, are also equivalent to a backup end system.

(b) In response to applicant's arguments, the recitation that a plualirty of user end systems are interconnected by a protected optical network, has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

(c) In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e. where the optical network protection does not extend to the user end-systems (page 3); signaling through the network so that the end systems can protect themselves

page 4 line 6), are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

8. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher P. Grey whose telephone number is (571)272-3160. The examiner can normally be reached on 10AM-7:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on (571)272-7629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Christopher Grey
Examiner
Art Unit 2616

June 21, 2007

DORIS H. TO
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